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Pamphlet 40-503

Medical Services

Industrial Hygiene Program

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SUMMARY of CHANGE

DA PAM 40-503

Industrial Hygiene Program

This new pamphlet--

- o Summarizes the authority documents that establish the industrial hygiene program (para 1-4).
- o Establishes the objectives and mission for the industrial hygiene program (paras 1-5 and 1-6).
- o Clarifies and delineates those standards (Occupational Safety and Health Administration, military-unique, or national consensus) applicable to the industrial hygiene program (para 1-8).
- o Outlines the functions needed to implement the industrial hygiene program (para 2-1).
- o Explains how and where the industrial hygiene program manager may obtain technical and managerial assistance (para 2-2 and table 2-1).
- o Outlines the available functional and technical resources needed to operate an industrial hygiene program (chap 3).
- o Describes the fundamental processes of industrial hygiene: health hazard anticipation, recognition, evaluation, and control (chap 4).
- o Explains the process of credentialing, privileging, supervising, and certification/licensing of industrial hygiene personnel (para 5-4).
- o Outlines the quality assurance aspects of the industrial hygiene program (chap 5).
- o Explains all types and requirements for recordkeeping in the industrial hygiene program (chap 6).
- o Outlines the role of industrial hygiene in other U.S. Army Medical Department-proponency programs (chap 7, sec I).
- o Outlines the role of the industrial hygiene program manager in U.S. Army Medical Department-supported programs (chap 7, sec II).
- o Explains the needed coordination for an effective industrial hygiene program (chap 7, sec III).
- o Lists the minimum sampling equipment requirements for an industrial hygiene program (app B).
- o Provides a sample industrial hygiene implementation plan (app C).
- o Identifies the risk assessment codes for health, safety, ergonomic, and noise hazards (app D).


Medical Services

Industrial Hygiene Program

By Order of the Secretary of the Army:

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History. This printing publishes a new Department of the Army Pamphlet.

Summary. This pamphlet provides guidance for implementing the essential elements of the Army industrial hygiene program.

Applicability. This pamphlet applies to the Active Army, Army National Guard, and U.S. Army Reserve.

Proponent and exception authority. The proponent for this pamphlet is The Surgeon General (TSG). The Surgeon General has the authority to approve exceptions to this pamphlet. Only exceptions that are consistent with controlling law and regulation may be approved. The Surgeon General may delegate this authority in writing to a division chief within the

Office of The Surgeon General (OTSG) in the grade of colonel or the civilian grade equivalent.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (DASG-HSZ), 5109 Leesburg Pike, Falls Church, VA 22041-3258.

Distribution. This publication is available in electronic media only (EMO), intended for command levels C, D, and E for Active Army, Army National Guard, and U.S. Army Reserve.

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Chapter 1

Introduction

1-1. Purpose

This pamphlet—

- a.* Provides guidance for implementing the essential elements of the industrial hygiene (IH) program.
- b.* Defines industrial hygienist's role in other Army programs.
- c.* Describes the IH mission required by law, policy, and professional practice.

1-2. References

Required and related publications are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1-4. Summary of authority

The following documents summarize the line of authority that establishes the IH program.

a. Executive Order 12196, title 3, Code of Federal Regulations (3 CFR) required the Secretary of Labor to establish an occupational safety and health (OSH) program for Federal employees. The Department of Labor promulgated part 1960, title 29, Code of Federal Regulations (29 CFR 1960), which provides the regulatory requirements of this program for Federal employees.

(1) These documents implement Public Law 91-596, Occupational Safety and Health Act of 1970 and require the executive branches of government to comply with Occupational Safety and Health Administration (OSHA) standards.

(2) In some instances, state programs govern operations within the state, with Federal oversight. In these states, the state OSH personnel may enter Army facilities and enforce state OSH regulations. It is important to determine whether the operation is a concurrent jurisdiction or exclusive jurisdiction area.

(a) Federal rules apply in exclusive jurisdiction areas; therefore, state personnel are not typically authorized to inspect the area.

(b) State laws may apply in concurrent jurisdiction areas; therefore, state personnel are authorized to inspect Army or Army contractor operations for compliance with their state standards.

(c) For further information regarding specific jurisdictional relationships, contact the installation or major command Staff Judge Advocate office.

b. Department of Defense Directive (DODD) 1000.3 and Department of Defense Instructions (DODI) 6055.1 and 6055.5 provide general guidance and policies for the OSH program implementation and apply to military and civilian personnel.

c. AR 40-5 directs, establishes, and defines the Occupational Health (OH) program for the Department of the Army (DA).

d. AR 385-10 directs, establishes, and defines the Occupational Safety program for DA.

e. This DA Pamphlet (DA Pam) describes the IH element of the OSH program.

1-5. Program objectives

The IH program works cooperatively with other Army programs (such as, Safety) to—

a. Provide one of the medical elements of the force protection component of combat power that maintains the readiness and availability of Army personnel for operations.

b. Eliminate or control workplace health hazards to prevent occupational related illnesses, injuries, or deaths to soldiers and civilian workers.

c. Characterize workplace exposure to potential health hazards, which facilitates exposure-based medical surveillance and occupational healthcare.

d. Comply with OSHA and other applicable Federal and state laws and codified regulations. (See app A.)

e. Reduce costs associated with lost manhours, medical treatment and surveillance, and workers' compensation.

f. Integrate established IH principles and concepts into allied programs.

g. Perform IH functions in support of allied programs such as Safety, Chemical Surety, Hearing Conservation, Respiratory Protection, and environmental compliance with Environmental Protection Agency, Comprehensive Environmental Response Compensation Liability Act, Resource Conservation Recovery Act, SUPERFUND Amendments and Reauthorization Act III, asbestos control, and lead abatement.

1-6. Program mission

Industrial hygiene is a component of the Army's health mission. Industrial hygienists use technical expertise to

anticipate, recognize, evaluate, and control workplace health hazards. They work with other disciplines to develop economical and pragmatic solutions to prevent occupational illness, injury, and death.

1-7. Program outline

a. Resources. Implementation of the IH program is contingent upon certain resources such as money, manpower, and materials. Chapter 3 describes these functional and technical program resources.

b. Elements. The essential elements of an IH program include:

- (1) Health hazard anticipation, recognition, evaluation, and control (chap 4).
- (2) Quality assurance (chap 5).
- (3) Recordkeeping (chap 6).
- (4) Worker education (chap 7).

c. Relationships. In addition to implementing the elements of the IH program, IH also supports and cooperates with other Army programs such as Safety, OH, and Environment to protect the health of the worker (chap 7).

1-8. Standards

Standards applicable to the DA OSH program are noted below. Industrial hygienists must use the information contained in 29 CFR 1910 and the documentation of other standards to evaluate employee exposure to hazardous chemical, biological, and physical agents. Where OSHA permissible exposure limits (PELs) exist, they must be used. The other standards described below, except for those published in U.S. Army Medical Department (AMEDD) policy documents, are subject to the application of professional IH judgment. The written record of the IH evaluation must contain the justifications for any deviations from the non-OSHA standards described below.

a. Occupational Safety and Health Administration standards. The OSHA standards are enforceable by law and apply to DA workplaces that are comparable to that of the private sector. The OSHA regulates health hazard exposures with PELs. Some standards such as those for lead, asbestos, and chemical hygiene mandate medical surveillance, controls, records, notification, and other actions, in addition to PELs.

b. National consensus standards. Consensus standards, such as those of the American Conference of Governmental Industrial Hygienists (ACGIH), should be applied to DA workplaces that are comparable to the private sector; however, they are not enforceable by law. The ACGIH uses threshold limit values (TLVs)TM to manage health hazard exposures. Because consensus standards do not have to undergo the full public comment and response process before use, they are usually more current and reflect the state-of-the-art in the scientific/medical application of health-based exposure standards. The DA mandates the use of ACGIH TLVs when they are more stringent than OSHA regulations or when there is no PEL.

c. Military-unique standards. The DA has many unique operations in research, munitions, and chemical demilitarization which neither OSHA nor ACGIH cover. To regulate these operations, DA develops military-unique standards such as DODI 6055.1.

d. Alternate standards. In those rare instances when neither OSHA, ACGIH, nor military-unique standards exist, DA endorses appropriate professional IH use of alternate standards such as those developed by the—

- (1) National Institute for Occupational Safety and Health.
- (2) U.S. Environmental Protection Agency.
- (3) U.S. Department of Transportation.
- (4) Chemical/substance manufacturer.
- (5) American Society of Heating, Refrigerating and Air Conditioning Engineer.
- (6) American National Standards Institute (ANSI).
- (7) Department of Housing and Urban Development for lead dust levels to be applied in the lead abatement program.

e. Threshold limit values. TLVTM is a registered trademark of the American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio. Use of trademarked names does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.

Chapter 2 Implementation

2-1. Implementing functions

a. The Surgeon General (TSG) implements—

- (1) DA operational and administrative policies.
- (2) Personnel policies for IH professionals and technicians per AR 600-3 and provides guidance regarding career development, career programs, referral, and all personnel matters. (See Civilian Personnel Career Management, Army Civilian Training, Education and Development System (ACTEDS) Plan, Industrial Hygiene.)

- (3) Development of policy on credentialing and privileging.
- b. The Commander, U.S. Army Medical Command; Command Surgeons; Chief, U.S. Army Corps of Engineers; Director, U.S. Army National Guard; and the Commander, U.S. Army Reserve Command implement—
 - (1) Management of all aspects of command implementation of TSG's policies pertaining to the IH program.
 - (2) Quality assurance (QA) standards for operating IH programs described in chapter 5.
 - (3) Operation of a command IH credentialing/privileging system.
- c. The Commanders at all other levels must provide a safe and healthful workplace for all employees.
- d. The Installation Medical Authority (IMA) implements—
 - (1) Provision of IH services to all Department of Defense (DOD) civilian and military personnel in the geographical area of responsibility.
 - (2) Sufficient budget and personnel to accomplish the IH program objectives.
 - (3) Professional-level training for industrial hygienists and technicians. (See para 3-1b(3).)
 - (4) Adequate office, storage and laboratory space for the IH program. (See para 3-3.)
 - (5) Review and approval of the IH program document before publication. (See para 3-8.)
- e. The installation AMEDD industrial hygiene program manager (IHPM) (or equivalent U.S. Army Corps of Engineers, U.S. Army National Guard, and U.S. Army Reserve personnel) implements—
 - (1) Requests for technical and managerial assistance from the supporting activity when needed. (See para 2-2.)
 - (2) IH program staff of qualified, credentialed, and privileged personnel. (See para 3-1.)
 - (3) Proper training for IH personnel before performing duties. (See para 3-1b(3)(c).)
 - (4) Proper selection and ordering of survey equipment and supplies. (See para 3-2.)
 - (5) A prioritized budget plan and participates in the budgeting process. (See para 3-4.)
 - (6) Development, monitoring, and reporting performance indicators to show program effectiveness.
 - (7) IH personnel to—
 - (a) Maintain and use the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene (DOEHRS-IH). (See para 3-7a.)
 - (b) Enter survey data in the DOEHRS-IH. (See para 4-7.)
 - (c) Enter health hazard evaluation data in the DOEHRS-IH per paragraph 4-11.
 - (8) Development and use of an industrial hygiene implementation plan (IHIP) to manage IH services that reflect priorities and resources. (See para 3-6.)
 - (9) The annual revision and publishing of the program document.
 - (10) The necessary reference materials for the IH program. (See para 3-8.)
 - (11) The development and coordination of installation regulations, supplements to ARs, or other applicable documents to define the IH program and delegate responsibility. (See para 3-8.)
 - (12) Evaluations of health hazards and operations per paragraphs 4-8 and 4-9.
 - (13) Assignment of health risk assessment codes (RACs) per paragraph 4-10 and appendix D.
 - (14) Recommendation of health hazard controls per paragraphs 4-15 and 4-16.
 - (15) Oversight of the credentialing, supervising, and licensing of the IH program staff per paragraph 5-4.
 - (16) A member of a QA committee to credential installation industrial hygienists to perform IH duties. (See para 5-4a(3).)
 - (17) Oversight of equipment calibration practices and the documentation of equipment calibrations. (See para 5-5.)
 - (18) Development of standing operating procedures (SOPs) for IH practices.
 - (19) Verification that IH data meet the legal requirements of OSHA per paragraph 5-7.
 - (20) Support of the design review process per paragraph 5-8.
 - (21) Assessment of the IH program annually per paragraph 5-9.
 - (22) The maintenance of IH records per chapter 6.
 - (23) Coordination with installation staff members to facilitate the IH program and to ensure the fulfillment of IH roles in other Army programs. (See chap 7.)
 - (24) Review of statements of work, requests for proposals, purchase orders, and support agreements to address OH/IH concerns. (See paras 7-28 and 7-29.)
 - (25) Coordination with the Safety Office to provide hazard communication (HAZCOM) training. (See paras 7-3, 7-7, and 7-19.)
- f. Supervisors implement practices and policies to ensure worker health and safety.
- g. All DA military and civilian personnel and contractor personnel working within government facilities are obligated to comply with OSHA standards by—
 - (1) Reporting unsafe or unhealthful working conditions as soon as possible to the supervisory chain or directly to the servicing safety office.
 - (2) Using engineering controls developed and installed to eliminate or mitigate potentially hazardous exposures.

- (3) Using issued personal protective equipment (PPE).
- (4) Adhering to provided OSH SOPs or guidelines.
- (5) Attending HAZCOM and other health hazard education training when scheduled.
- (6) Participating in workplace assessments by wearing personal sampling equipment.

2-2. Support for industrial hygiene services

The Regional Medical Commands, Medical Department Activity (MEDDAC) or health clinic IH staff located at the installation usually provides initial IH services. When the IH services required are beyond the technical capability or available resources of the local IH staff that support installations, the IHPM—

- a. Writes a memorandum to request services.
- b. Forwards the request through command channels (see AR 40-5, chap 1) to the subordinate command or to Commander, U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). Table 2-1 contains the supporting activities for all IH issues.

Table 2-1
Supporting activities for industrial hygiene issues

Organization	Address	Area Served
USACHPPM	Commanding General USACHPPM ATTN: MCHB-TS-O Aberdeen Proving Ground, MD 21010-5403	Worldwide support to laboratories listed below
USACHPPM-North	Commander USACHPPM-North ATTN: MCHB-AN-IH FT Meade, MD 20755-5225	Connecticut, Delaware, District of Columbia, Eastern Kentucky, Indiana, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia
USACHPPM-South	Commander USACHPPM-South ATTN: MCHB-AS-IH 1312 Cobb St. SW FT McPherson, Georgia 30330-1075	Alabama, Arkansas, Florida, Georgia, Western Kentucky, Louisiana, Mississippi, Oklahoma, Panama, Puerto Rico, South Carolina, Tennes- see, Central and Eastern Texas
USACHPPM-West	Commander USACHPPM-West ATTN: MCHB-AW-IH Box 339500 MS 115 FT Lewis, Washington 98433-9500	Alaska, Arizona, California, Colorado, Idaho, Illi- nois, Iowa, Kansas, Michigan, Minnesota, Mis- souri, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, West Tex- as, Utah, Washington, Wisconsin, and Wyoming
USACHPPM-Europe	Commander USACHPPM-Europe ATTN: MCHB-AE-MIH CMR 402 Landstuhl, Germany APO AE 09180	Europe, Africa, Middle East, and Western Asia
USACHPPM-Pacific	Commander USACHPPM-Pacific ATTN: MCHB-AJ-TOI Camp Zama Japan APO AP 96343-5006	Hawaii, Japan, Korea, Okinawa, Philippines, Thailand, and the other countries of the Far East

Chapter 3

Program Resources

Section I

Functional Resources

3-1. Manpower

- a. *Staffing.* The quality of the individual professionals charged with managing and implementing DOD OSH policy ultimately determines the success of the IH program. The IHPM strives to operate with adequate numbers of credentialed and privileged staff by—

(1) Using the IHIP (para 3-6) to document program requirements, workload, and work backlog to estimate manpower requirements.

(2) Recruiting, developing, and maintaining industrial hygienists to fill all authorized professional positions.

(3) Encouraging professional certification of individuals seeking to acquire or maintain professional qualifications.

b. Qualifications of program personnel.

(1) Selection criteria for civilians.

(a) The Office of Personnel Management Handbook Quality Standards describes the qualifications for each civilian general schedule (GS) job series. (GS-690 is the industrial hygienist position, and GS-640 and 698 are the IH technician positions.)

(b) The Civilian Personnel Office (CPO) uses the current edition of the Federal Personnel Manual, Chapters 335 and 338 to identify the best qualified from among the minimally qualified candidates.

(2) Selection criteria for military personnel. DA PAM 611-21 describes the commissioned officer's qualifications according to the specialty skill identifier, and the qualifications of enlisted personnel according to military occupational specialty codes.

(3) Training.

(a) As a minimum, the IMA will support sufficient training as defined in the ACTEDS for civilian and military officers acting as industrial hygienists and technicians to acquire and maintain competency.

(b) Supervisors and employees will use the individual development plan and performance management system to schedule annual training to fulfill requirements. (See AR 690-400.)

(c) The IHPM requires that IH personnel receive proper training before performing duties when regulatory standards or the credentialing system (see para 5-4) require specific training.

(d) The IHPM ensures that all training received by IH personnel is documented.

3-2. Survey equipment

The specific industrial operations at an installation determine the type of survey equipment required. For guidance on selecting survey equipment contact Commanding General, USACHPPM, ATTN: MCHB-TS-OFS, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403. Appendix B lists equipment requirements. The IHPM may find buyer's guides helpful in selecting and ordering survey equipment.

3-3. Facilities

The IMA will provide adequate office, storage, laboratory space, and transportation for the IH program. Facilities must be of adequate quality and size and must be suitably located to allow the performance of IH functions. Laboratory space is necessary primarily for user-performed maintenance, function testing, calibration, and equipment storage. Laboratory requirements depend on the type of equipment used and procedures performed.

3-4. Funding

The IHPM has the responsibility of—

a. Preparing a prioritized budget based on personnel availability and programmed services. The budget should cover all appropriate areas including personnel costs, training, travel costs, equipment and supply needs, capital requirements (Medical Care Support Equipment Program), contracts (laboratory analysis, calibration, and/or maintenance), and administrative needs (printing or reproduction).

b. Submitting the budget plan through command channels during the normal budgeting process and participating in the budgeting process. Table 3-1 depicts a sample IH budget plan.

c. Considering supplemental means of funding the organizational budget. Installation commanders and tenant activities may fund IH efforts for travel duty, specialized training, specialized equipment, personnel costs (temporary, overhire, or authorized), or laboratory costs.

Section II

Technical Resources

3-5. Program document

a. The program document is a formal publication that—

(1) Broadly defines the IH program's mission in relation to the local commander's, U.S. Army Medical Command's (MEDCOM's) or equivalent, and Office of The Surgeon General's (OTSG's) missions.

(2) Describes how the program's goals and objectives will be implemented with existing resources.

b. The IHPM completes the program document and updates annually. The IHPM may include the IH program document as a chapter or appendix to the overall preventive medicine program document, if it exists.

c. The IMA reviews and approves the IH program document.

3-6. Industrial hygiene implementation plan

a. To implement the program document, the IHPM must develop an IHIP. The IHIP is a living document, which schedules IH activities for a rolling 1-year period. The IHPM uses it to manage the systematic accomplishment of the prioritized IH activities, but not limited to, service requirements. These requirements are determined by assessing customer needs, obtaining commander's safety and OH emphasis, and reviewing OSHA regulations.

b. The automated data manipulation and retrieval features of the DOEHRS-IH allow the IHPM to transfer the database to word processing and then to help construct the IHIP.

c. The IHIP should include, as a minimum, the—

- (1) List of potentially hazardous operations.
- (2) Health hazards present at each operation.
- (3) Priority action code (PAC) assigned to each health hazard.
- (4) Industrial hygiene evaluations necessary for each health hazard.
- (5) Worksites scheduled for evaluation.
- (6) Completed evaluations.
- (7) Amount of time needed to complete the evaluation.
- (8) Risk assessment codes assigned to the operation.

d. Additional items included in the IHIP may increase its utility. Such items may include—

- (1) A remarks section.
- (2) The air sampling media and flow rate.
- (3) A list of—
 - (a) Equipment needed for each evaluation.
 - (b) Personnel assigned to complete the evaluations.
 - (c) Meetings, committee representatives, and training.

3-7. Defense Occupational and Environmental Health Readiness System-Industrial Hygiene

The DOEHRS-IH is a computer software program that automates the data needed to operate the IH program efficiently; provides exposure-based occupational healthcare support; and provides a historical record.

a. *Mandatory use requirement.* The maintenance and use of the DOEHRS-IH is mandatory for all DA IH personnel who identify and evaluate OH hazards.

b. *General functions and capabilities.* The IH module of the DOEHRS-IH—

- (1) Facilitates accomplishment of the IH program mission by allowing the industrial hygienist to—
 - (a) Identify personnel potentially exposed to workplace health hazards.
 - (b) Prioritize the evaluation of health hazards.
 - (c) Monitor control implementation for health hazard abatement.
 - (d) Identify and record which health hazards (due to exposure potential, number exposed or legal requirements) should be the target of IH operations.
 - (e) Provide TSG and other command and staff elements (such as the safety office) with information on industrial operations, exposures, and engineering controls.
 - (f) Defend and justify resource requirements (that is, manpower, equipment, and training).
 - (g) Access sampling and monitoring information to develop an IHIP.
 - (h) Provide a cross-reference for the installation's Environmental or Safety Office to locate potentially hazardous chemicals and products.
 - (i) Maintain equipment calibration records.
- (2) Provides data to the medical information module of the DOEHRS for occupational healthcare personnel to determine medical surveillance and other healthcare needs.

c. *Future innovation.* The DOEHRS-IH is a dynamic system and other IH program elements will be integrated in the system as they evolve, based on end-user input. End users are encouraged to submit ideas for improvement to Commanding General, USACHPPM, ATTN: MCHB-TS-OIM, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

3-8. Installation documents, regulations, and supplements

The IHPM could develop installation-level SOPs to define IH activities or responsibilities such as air monitoring or noise surveys. Installation-level documents (regulations or SOPs) detail to the IHPM how the installation operates. These documents may contain references to the IH program and its services. Therefore, the IHPM should review installation regulations and supplements to ARs and other applicable documents for IH input.

Table 3–1
Sample FYXX industrial hygiene budget plan

Item	Quantity	Cost per Item	Total
MEDDAC FUNDING			
1. Analytical laboratory service	100 samples	\$95	\$9,500
2. Attend American Industrial Hygiene Association (AIHA) conference	1 person	\$1,500	\$1,500
3. Detector tubes	10 boxes	\$35	\$350
4. Sample media	3 pkg filters	\$25	\$75
5. Sampling pumps	2	\$500	\$1,000
6. Filters for gas analyzers	2	\$300	\$600
7. Labor budget per staffing authority and overhead	2 Industrial Hygienists	\$70,000	\$140,000
		Subtotal	\$153,025
SUPPLEMENTAL FUNDING			
1. Laboratory costs for tenant	50 samples	\$95	\$4,750
2. Labor costs for sampling	150 hours	\$15	\$2,500
3. Local travel for tenant	200 miles	\$0.32	\$64
4. Special training	1 person	\$1,000	\$1,000
		Subtotal	\$8,314
UNFUNDED REQUIREMENTS			
1. Attend AIHA conference	1 person	\$1,500	\$1,500
2. Lead-Paint detector	1	\$2,500	\$2,500
3. Laser printer	1	\$1,500	\$1,500
4. Certified IH exam software	1	\$250	\$250
5. Publications	5	\$50	\$250
6. Unfunded labor costs	1 IH Technician	\$20,000	\$20,000
		Subtotal	\$26,000
		TOTAL	\$196,839

Chapter 4

Hazard Anticipation, Recognition, Evaluation, and Control

Section I

Hazard Anticipation

4–1. Definition of industrial hygiene

a. The Army adopts the AIHA's and ACGIH's definition of IH. These organizations define IH as the science and art devoted to the anticipation, recognition, evaluation, and control of those environmental factors and stresses associated with work and work operations that may cause sickness, impaired health and well being, significant discomfort, and inefficiency among workers or among the citizens of the community.

b. This chapter describes the fundamental processes of IH: hazard anticipation, recognition, evaluation, and control.

4–2. Flow of actions

Figure 4–1 depicts the sequential flow of actions through the processes of hazard anticipation, recognition, evaluation, and control.

4–3. Background

Use all available sources of information (documents, design review, planning committees, worker interviews) to foresee if a new or modified work operation or process could pose a health threat.

Section II

Hazard Recognition

4–4. Survey frequency and scope

a. Recognizing existing and potential hazards is a step towards improving health and safety in the workplace.

b. The 29 CFR 1960, AR 385-10, and AR 40-5 require the annual inspection of workplaces by OSH personnel who are qualified to recognize and evaluate hazards. The IHPM ensures that this annual workplace survey documents the IH aspects, such as—

(1) Chemical, physical, biological, and ergonomic hazards inherent to each activity. (See glossary.)

(2) Existing measures employed to control exposure to the hazard.

c. In situations where non-IH personnel have received appropriate training and privileging, such collateral duty personnel may perform the workplace survey and identify hazards under the pervue of a credentialed IH. The industrial hygienist, however, is ultimately responsible for the evaluation and recommendation of controls for the identified hazards.

4-5. Recording survey data

Industrial hygiene personnel record the survey information using guidance provided in the most current edition of the DOEHS-IH User's Manual. To obtain copies of the guide write to Commanding General, USACHPPM, ATTN: MCHB-TS-OIM, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

4-6. Assigning priority action codes

a. Once workplace hazards are recognized, IH personnel assign PACs to each hazard. The most current edition of the DOEHS-IH User's Manual describes the method for assigning PACs.

b. The IHPM uses the PACs to manage workload by scheduling evaluations of hazards. Give precedence to the worst-case health hazards. One operation may have several different hazards associated with it. Therefore, the IHPM must somehow prioritize these hazards for evaluation. The PACs are a method for this prioritization.

c. The IH personnel integrate the relative importance of the following criteria as the basis for each hazard's PAC assignment:

- (1) Regulatory requirements.
- (2) Toxicity.
- (3) Quantity.
- (4) Potential for entry and action of the toxic material to the body.
- (5) Frequency and duration of use.
- (6) Engineering and administrative controls employed.

4-7. Entering survey data in the DOEHS-IH

Once IH personnel survey the workplace and assign PACs, the IHPM must ensure that the survey data are entered in the installation's DOEHS-IH.

Section III

Hazard Evaluation

4-8. Purpose and scope

a. Health hazard evaluations are the foundation on which the OH program is built. Health hazard assessments identify and quantify all potential and actual health hazards. A comprehensive health hazard assessment requires the IHPM to collect both qualitative and quantitative data. The IHPM uses this data to assess the effectiveness of protective equipment, administrative controls and engineering controls. Health hazard assessments also provide occupational medicine personnel with data to develop an effective medical surveillance program.

b. Following the IHIP's (or order of accomplishment) established priorities (PACs), the IHPM ensures that—

(1) Each operation performed on the installation is analyzed to evaluate and document all worker exposures, both potential and/or real. Documentation of exposures includes qualitative and quantitative assessment.

(2) A sampling strategy is developed that includes both recognized qualitative and quantitative protocols to provide statistically significant exposure data. Breathing zone, ventilation and noise measurements, and other appropriate hazard exposure measurements are performed and documented using the sampling strategy. (USACHPPM Technical Guide (TG) 141 provides instructions for sampling chemical contaminants, and DA PAM 40-501 and USACHPPM TG 181 provide instructions for sampling noise hazards.)

(3) Sampling results are subject to approved statistical analysis to determine data significance. Statistical analysis is used to determine data accuracy and precision and exposure trends. The IHPM must use statistical analysis to both develop sampling strategies and to analyze sample results.

(4) Statistical analysis is not a substitute for professional judgment but is an additional tool used by the IHPM to provide a better health hazard assessment. When exposure conclusions/decisions are obvious, such as during emergencies or when the data obviously indicates an overexposure and/or very low exposures, the application of statistical analysis is not warranted.

4-9. Frequency

Health hazard evaluation is a continuous process. Changes in operations over time may affect levels of exposure to chemical, physical, and biological agents. Therefore, the IHPM should ensure that operations are evaluated to build hazard level and exposure histories for each operation when—

- a. The process changes.

- b. Personnel change.
- c. The work rate changes.
- d. Engineering controls degrade or are modified.
- e. Building and structural changes occur.

4-10. Assigning risk assessment codes

Based on the hazard evaluation, the IHPM has the responsibility of—

- a. Assigning either a health and/or a safety RAC (DODI 6055.1) based on the particular operation. (See app D.)
- b. Assigning a RAC to accurately reflect the magnitude of the risk.
- c. Using the sampling data to determine and document the assigned RACs.
- d. Forwarding the RACs to the local Safety Office for inclusion in the hazard abatement plan.

4-11. Entering evaluation data in the DOEHRs-IH

The IHPM enters the following evaluation data in the DOEHRs-IH:

- a. The RAC.
- b. All quantitative assessment data, even if exposure results are negative or below action levels. Data indicating that exposures are below exposure limits are as important as data indicating an overexposure.

4-12. Worker notification

Regardless of outcome, the IHPM notifies, in writing, the workplace supervisor of the assessment results. The supervisor in turn notifies the employees.

4-13. Applications for quantitative exposure data

A database of quantitative exposure data of worker exposure provides input to (see chap 7)—

a. *The OH program.* Quantitative measurements of exposure allow the medical practitioner to determine the appropriate type and frequency of medical surveillance testing needed to monitor and document the physical well being of the worker over the course of employment.

b. *The installation respiratory protection program (AR 11-34).* Quantitative exposure data allow for the proper selection of respiratory protective equipment (RPE). To ensure the recommended RPE remains appropriate for the intended use, continued periodic measurement of the contaminant's exposure levels is necessary.

c. *The installation hearing conservation program.* Quantitative measurements of noise levels allow for the proper selection of hearing protective devices. Continued measurements of noise hazardous operations are necessary to ensure that hearing protective devices are appropriate for the intended use (DA PAM 40-501 and USACHPPM TG 181).

d. *The installation civilian personnel office.* Quantitative assessments of specific workplace or occupational exposures can assist the personnel specialist in defining job requirements and managing the civilian resource conservation program (chap 7).

e. *The installation safety office.*

(1) Quantitative assessments of exposure and workplace conditions aid the installation safety office in promoting safe work practices and conditions.

(2) Quantitative measurements of exposure aid in managing the hazard abatement program by prioritizing—

(a) Funds for implementing hazard controls (see para 4-11).

(b) Work areas and operations for the implementation of hazard controls.

f. *The workplace supervisor.* Quantitative assessments of exposure and workplace conditions aid supervisors in correcting unsafe working conditions, enforcing safe work practices, and scheduling employees for HAZCOM and other training.

Section IV

Hazard Control

4-14. Introduction

When a chemical, physical, or biological hazard cannot be eliminated from the workplace, worker exposure can be controlled through engineering controls, administrative controls, and lastly, through PPE. The IHPM recommends the appropriate control, often consulting with area supervisors, facility engineers, safety, or other health professionals and monitors the implementation of the recommended controls.

4-15. Engineering controls

The implementation of engineering controls is the primary means of controlling worker exposure to the hazard. The type of engineering control and the status of that control should be entered in the DOEHRs-IH. Engineering controls may include—

- a.* Substitution of processes or materials.
- b.* Local exhaust ventilation.
- c.* Barriers or structures that separate or isolate the worker(s) or the process.
- d.* Redesign of the equipment or process.

4-16. Administrative controls

- a.* Administrative controls are a means of limiting worker exposure. Administrative controls may include—
 - (1) Rotating workers throughout the various tasks during the working day to limit exposure to any individual worker.
 - (2) Limiting the duration of an operation performed.
- b.* The 29 CFR 1910 prohibits the implementation of administrative controls solely to maintain the contaminant exposure of each worker below the PEL. The IHPM should consult specific OSHA standards prior to recommending administrative controls.

4-17. Personal protective equipment

The PPE is a secondary means to controlling exposure to a hazard under the following conditions:

- a.* When the implemented engineering controls will not sufficiently reduce or eliminate employee exposure.
- b.* When engineering controls are technologically unfeasible. (Note: Insufficient funding is not a valid reason for not implementing engineering controls.)
- c.* Before installing engineering controls.

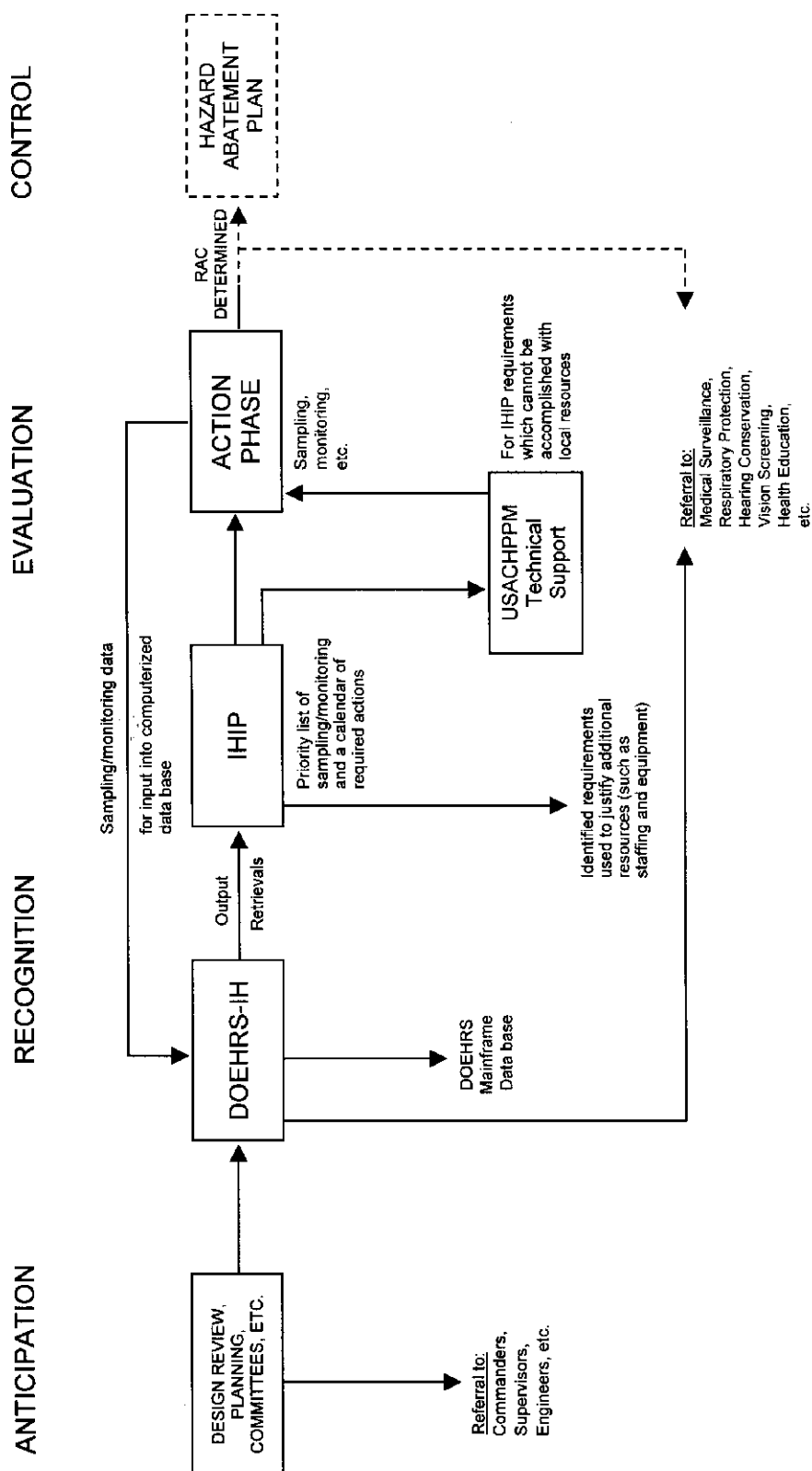


Figure 4-1. Flow of the Industrial Hygiene Program

Chapter 5

Quality Assurance

5-1. Scope

The MEDCOM depends on the major command IH staff officer and the local IHPM to implement QA measures, such as—

- a. Upholding the standards of conduct and code of ethics and maintaining certification/licensure for IH personnel.
- b. Credentialing, privileging, and supervising IH personnel (assuring that qualified individuals are performing program functions).
- c. Verifying equipment calibration to assure the accurate quantitative measurement of health hazards.
- d. Using accredited IH laboratories to verify accurate analysis of data.
- e. Verifying data that assures the accuracy and completeness of data prior to inclusion in the DOEHRS-IH.
- f. Reviewing plans and designs to monitor the adequacy of engineering controls.
- g. Conducting self-audits and participating in external audits to assess the effectiveness of the IH program.

5-2. Standards of conduct

All IH personnel are personally responsible for adhering to the standards of conduct per DODD 5500.7.

5-3. Code of ethics

All IH personnel must adhere to the professional goals outlined by the AIHA, Membership Directory, Who's Who in Industrial Hygiene, most current edition. (See fig 5-1.)

5-4. Credentialing, privileging, supervising, and certification/licensing of industrial hygiene personnel

a. Credentialing/privileging.

(1) The practice of IH is directly related to the delivery of appropriate patient care services and employee health. The IH information pertaining to hazardous substance exposure, work practices, PPE, and engineering controls is essential for the occupational healthcare provider to—

- (a) Implement medical surveillance.
- (b) Prescribe job restrictions.
- (c) Provide employee health education.
- (d) Diagnose occupational illness and make treatment decisions based on exposure information.

(2) There are few Federal or state legal requirements governing the general practice of IH. The current Office of Personnel Management standards for a GS-690 industrial hygienist do not ensure referral of individuals who are qualified to competently practice the discipline to Army standards. However, competent quality services can be delivered if the industrial hygienist participates in a credentialing program to review formal education, training, and experience.

(3) The major command IH staff officers and local IHPMs using the general guidance in the Civilian Personnel Career Management, ACTEDS-IH will be able to administer an IH credentialing/privileging program.

b. Supervision. IH technicians and collateral duty personnel may perform IH operations. These operations must be monitored by a credentialed IH.

c. Certification/licensing. All IH personnel will also maintain current licensure and/or certification according to regulatory and professional requirements. The MEDCOM will support acquisition and maintenance of certification and licensing needed for credentialing of IH personnel.

5-5. Verification of equipment calibration

a. To obtain reliable quantitative data, equipment used requires operational and periodic calibration. Operational calibration is usually performed before and after the use of equipment. Periodic calibration is performed on very stable types of equipment at least annually or depending on equipment use and manufacturer recommendation.

b. The IHPM—

- (1) Ensures that the Army calibration system is practiced per AR 750-43.
- (2) Ensures that calibrations are based on a method traceable to a recognized authority, such as the National Institute of Standards and Technology.
- (3) Allows manufacturer and/or contract calibration facilities to calibrate equipment only if their methods meet traceability and calibration standards.
- (4) Ensures that complete records of calibrations are maintained per AR 25-400-2.

(5) Ensures that documented data and cross-reference values conform to nationally/internationally accepted QA practices.

(6) Ensures that a calibration SOP is developed incorporating manufacturer's instructions.

5-6. Industrial hygiene laboratories

The IHPM should use only those laboratories that meet AIHA accreditation. All IH and laboratory personnel must follow chain-of-custody procedures, because IH data are potentially subject to legal proceedings.

5-7. Data verification

The IH data are used for patient care decisions and legal proceedings, and the IHPM must—

a. Verify that the data entered in the DOEHS-IH are an accurate and complete record of the identification and evaluation of health hazards. Additional safeguards, such as chain-of-custody, may be necessary for IH data likely to be involved in legal proceedings, such as exposure sampling done after personal injury or death.

b. Review data obtained from other sources such as technicians, safety professionals, collateral duty personnel, and contractors before inclusion in the DOEHS-IH database.

5-8. Plans and design review

The design review process allows the IHPM to monitor the adequacy of proposed or modified OH engineering controls. The IHPM makes recommendations for corrections before implementing controls to avoid waste and delay in the design review process.

5-9. Program assessment

a. The IHPM will perform an annual self-audit of the IH program using guidance provided in USACHPPM TG 165. The results of this audit are used to recognize and target weaknesses and to make plans for improvement. The command industrial hygienist/staff officer may request audit results.

b. The USACHPPM provides external assessments of local programs per the request of the IHPM or the command industrial hygienist. For assistance on external assessments, contact Commanding General, USACHPPM, ATTN: MCHB-TS-OIM, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

c. Results of self-audits and external assessments are used to identify Army-wide IH program strengths and weaknesses and to target systemic problems for resolution.

PURPOSE:

This code provides standards of ethical conduct to be followed by industrial hygienists as they strive for the goals of protecting employees' health, improving the work environment, and advancing the quality of the profession. Industrial hygienists have the responsibility to practice their profession in an objective manner following recognized principles of IH, realizing that the lives, health, and welfare of individuals may be dependent upon their professional judgment.

RESPONSIBILITY TO PROFESSIONAL INDUSTRIAL HYGIENISTS:

1. Maintain the highest level of integrity and professional competence.
2. Be objective in the application of recognized scientific methods and interpretation of findings.
3. Promote IH as a professional discipline.
4. Disseminate scientific knowledge for the benefit of employees, society, and the profession.
5. Protect confidential information.
6. Avoid circumstances where compromise of professional judgment or conflict of interest may arise.

RESPONSIBILITY TO EMPLOYEES:

1. Recognize the primary responsibility of an industrial hygienist is to protect the health of employees.
2. Maintain an objective attitude toward the recognition, evaluation, and control of health hazards regardless of external influences, realizing the health and welfare of workers and others may depend upon the industrial hygienist's professional judgment.
3. Counsel employees regarding health hazards and the necessary precautions to avoid adverse health effects.

RESPONSIBILITY TO EMPLOYERS AND CLIENTS:

1. Act responsibly in the application of IH principles toward the attainment of healthful working environments.
2. Respect confidences, advise honestly, and report findings and recommendations accurately.
3. Manage and administer professional services to ensure maintenance of accurate records to provide documentation and accountability in support of findings and conclusions.
4. Hold responsibilities to the employer or client subservient to the ultimate responsibility of protecting the health of employees.

RESPONSIBILITY TO THE PUBLIC:

1. Report factually on IH matters of public concern.
2. State professional opinions founded on adequate knowledge and clearly identified as such.

Figure 5-1. Code of Ethics for the Professional Practice of Industrial Hygiene

Chapter 6

Recordkeeping

6–1. Introduction

The IH records are required to meet legal and professional requirements. The IHPM ensures the records are maintained per appropriate Federal regulations (such as 29 CFR 1910.1020, 1915, and 1960, and 40 CFR). Both automated and hard copy records are required.

6–2. DOEHS-IH records

The DOEHS-IH is an automated management information system and is the primary method for maintaining the following records:

- a.* Demographic information on workplaces.
- b.* Health hazard evaluations.
- c.* Existing health hazard control methods.
- d.* Recommendations for control implementation and improvement.
- e.* Equipment calibration.

6–3. Hard copy records

In addition to records within the DOEHS-IH, some hard copy records must be maintained as they may be required to defend sampling strategies and results. These records include:

- a.* Analytical laboratory results.
- b.* Equipment calibration records.
- c.* Survey officer records.

6–4. Survey files

The IHPM ensures that survey files are maintained per AR 25-400-2. Files may be maintained indefinitely to meet local or regulatory needs. The 29 CFR 1910.1020 specifies additional requirements for sampling data.

Chapter 7

Program Relationships

Section I

The Industrial Hygiene Program Manager's Role in Other Army Medical Department-Proponency Programs

7–1. Occupational medicine and nursing

- a.* The role of the IHPM in occupational medicine and nursing (AR 40-5) includes:

- (1) Collecting data for the DOEHS-IH and transferring data to the Management Information Module per the most current edition of the DOEHS-IH User's Manual.

- (2) Professional collaboration between occupational healthcare personnel to resolve specific instances of elevated medical surveillance results by addressing the worksite causes of exposure and entry and action of the particular health hazard generating the concern.

- (3) Using the standard Army safety and occupational health inspection to generate comprehensive IH and OH surveys of worksites.

- b.* The USACHPPM develops and publishes approved OH training materials and can provide specialized training to assist supervisors in training workers about protective measures. Contact Commanding General, USACHPPM, ATTN: MCHB-TS-O, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403 for assistance.

7–2. Hearing conservation

The role of the IHPM in hearing conservation (DA PAM 40-501 and USACHPPM TG 181) includes:

- a.* Identifying and evaluating noise hazardous areas and ensuring that areas are demarcated properly.
- b.* Maintaining a current listing of noise hazardous areas.
- c.* Recommending engineering controls and PPE for workers exposed to excessive noise levels.
- d.* Assessing noise levels at workplaces and worker exposure to noise in the workplace.
- e.* Providing the names of noise-exposed personnel and the magnitude of their noise exposure to—

- (1) Hearing conservation officer.
- (2) Unit commander or supervisor of the individual.

7-3. Vision conservation

a. The role of the IHPM in vision conservation (TB MED 506) includes:

(1) Documenting eye health hazards, eye protection required and used, the need for illumination, and further assessments during annual evaluations of the workplace.

(2) Recommending eye protection and engineering controls to eliminate or control eye health hazards.

b. Once the information described above is entered into the DOEHRS-IH, the IHPM can easily extract such information and forward it to the vision conservation program manager and Safety Manager. (See para 7-19.)

7-4. Ergonomics

a. Ergonomics is the science of designing the job and the workplace to fit the worker for purposes of reducing worker discomfort and illness due to repetitive motion or repetitive stress injury, thereby maintaining health and increasing productivity.

b. Illness due to repetitive motion or repetitive stress may include, but is not limited to, back strain, chronic low back pain, Raynaud Syndrome and carpal tunnel syndrome.

c. The role of the IHPM in ergonomics includes:

(1) Integrating ergonomic review in the recognition and evaluation phase of the DOEHRS-IH.

(2) Participating with OH and safety personnel and physical or occupational therapists (if available) in the evaluation of operations where ergonomic health hazards may exist.

(3) Incorporating worker input in the development of control recommendations for ergonomic health hazards.

(4) Serving on the installation ergonomics subcommittee. (See AR 40-5.)

(5) Considering work-related musculoskeletal disorders (WMDs) during routine worksite evaluations.

(6) Performing or assisting with in-depth ergonomic assessments as needed.

(7) Assisting in solving problems related to identified WMDs.

(8) Keeping accurate records of identified WMDs and high-risk work areas and solutions. The IH personnel should provide these records to the ergonomics subcommittee for review and tracking. The records will be stored in the DOEHRS-IH once this function is available in the software.

(9) Providing ergonomics training and education for military and civilian personnel. Persons tasked to provide training should obtain refresher ergonomics training to maintain expertise.

(10) Working with medical personnel in the identification of potential WMDs and advising medical personnel on ergonomic changes related to the workstation, tasks, and tools.

7-5. Medical radiation protection

a. The role of the IHPM in medical radiation protection (AR 40-5) includes identifying ionizing and non-ionizing radiation health hazards during annual evaluations and updates of worksites.

b. Once the information described above is entered in the DOEHRS-IH, the IHPM can easily extract such information and forward it to the radiation protection officer. Note: The film badge program that monitors personnel exposure and ionizing radiation is a separate entity and such information should not be duplicated in the DOEHRS-IH.

7-6. Medical treatment facility industrial hygiene

The role of the IHPM in medical treatment facility (MTF) IH includes:

a. Identifying, evaluating, and providing control recommendations for hospital unique exposures, such as waste anesthetic gases (TB MED 510), ethylene oxide, and the chemicals in clinical laboratories.

b. Providing information on the possible mechanism of the spread of infectious agents within MTF work environments. Generally this will involve assessing ventilation systems, evaluating work practices, and instituting engineering and PPE controls. Examples of potential exposure include healthcare and MTF worker exposure to tuberculosis and bloodborne pathogens. (The principles relating to ventilation, protective equipment, and other controls apply to infectious agents as well as chemical contaminants.)

Section II

The Industrial Hygiene Program Manager's Role in Army Medical Department-Supported Programs

7-7. Health hazard communication program (HAZCOM)

a. Of the six required elements of the installation-managed HAZCOM program, the IHPM assists in three: workplace evaluation, training, and the use of material safety data sheets (MSDSs).

(1) Workplace evaluations are a shared responsibility and for the purposes of HAZCOM such evaluations determine the chemicals and the workers to be covered by the program.

(2) The IHPM's participation in HAZCOM training is essential, because IH personnel normally have the most detailed knowledge of health effects related to specific workplace exposure, engineering controls, work practices to limit exposure, and the capabilities and limitations of PPE. The train-the-trainer approach makes efficient use of limited IH resources; however, some situations may require industrial hygienists to train groups of workers.

(3) The IHPM should be involved in the review of MSDSs for locally procured materials, when appropriate. Reviewing the MSDS allows industrial hygienists to—

- (a) Suggest the substitution of less toxic materials.
- (b) Recommend appropriate worksite engineering controls or PPE as appropriate.
- (c) Identify entirely unsuitable uses of chemicals.

b. The 29 CFR 1910.1200 and DODI 6050.5 require training of workers in the skills needed to perform duties in a safe and healthful manner. Training should include all aspects of the job, such as—

- (1) General operational procedures (laying a welding bead).
- (2) Special requirements (using a glass shade to see the welding bead).
- (3) General and specific potentially hazardous exposures and conditions inherent to the job.

c. The IHPMs involved with supervisor and worker health hazard training use various techniques to train workers and supervisors (whether soldier or civilian). These techniques vary according to the local situation. The IHPM may—

(1) Train a cadre of personnel who in turn train others. This technique, called train-the-trainer, is a means to stretching OH manpower and to assisting supervisors in meeting their HAZCOM responsibilities.

(2) Conduct classes at the workplace to train workers directly.

(3) Use the supervisor and worker contact time during the identification and evaluation of potential health hazards to train the operating unit personnel in the—

- (a) Specific physiological action of the suspect health hazards.
- (b) Correct procedures or controls that can mitigate or eliminate potential exposures.

7-8. Respiratory protection

The role of the IHPM in the installation-managed respiratory protection program (AR 11-34) includes:

a. Evaluating workplaces to determine whether workers require respiratory protection and to recommend types of respirators.

b. Providing assistance to the installation respiratory protection specialist by training the installation respirator specialist or technicians in the—

- (1) Capabilities and limitations of respirators.
- (2) Criteria for selecting the proper respirator.
- (3) Use and care of respirators.

7-9. Asbestos management

The role of the IHPM in Corps of Engineer-managed installation asbestos management (TB MED 513 and AR 200-1) includes:

a. Advising government-contracting officials on the preparation and review of contract specifications and proposals for asbestos abatement issues.

b. Providing technical input for the selection of proper methods for abating potential asbestos health hazards.

c. Serving as the principle advisor and consultant (competent person) (29 CFR 1926.1101) to the Asbestos Control Manager and for DA operations involving personnel, to include military and DA civilian, on the installation concerning asbestos abatement projects.

7-10. Standard Army safety and occupational health inspections

a. AR 40-5, chapter 5 identifies IH responsibilities. The IH mission defined in AR 40-5 will meet the standard Army safety and occupational health inspections (SASOHI) requirements of AR 385-10.

b. The OSHA regulation concerning Federal employees (29 CFR 1960, AR 385-10, and AR 40-5) requires persons qualified through training and experience to identify and evaluate worksite health hazards and to operate monitoring equipment. (See para 4-4.) The industrial hygienist has responsibility for assessing health hazards in DA worksites that have potential chemical, physical or biological health hazards. The role of the IHPM in SASOHIs includes:

(1) Performing field surveys to complete the annual SASOHI requirements for all workplaces, which have potentially hazardous chemical, physical, or biological exposures.

(2) Assigning health RACs to operations or chemical, physical, or biological health hazards for inclusion in installation prioritized abatement action plans.

(3) Providing the installation safety officer with DOEHRs-IH information and results of field surveys.

7-11. Hazardous and medical wastes

a. The IHPM can assist in ensuring the safe handling and storage of hazardous and medical wastes generated at an installation. The IHPM should be aware of—

- (1) The potential health threats involved in the handling and storage of hazardous and medical wastes.
 - (2) The potential for transmission of the human immunodeficiency virus and the hepatitis-B virus from blood products and articles saturated with blood to the hospital housekeeping and healthcare staff. The USACHPPM TG 190 provides guidance on bloodborne pathogens.
 - (3) Operations generating potentially hazardous wastes.
 - (4) Locations where hazardous waste is stored at the installation.
 - (5) The reactivity of non-compatible substances.
- b.* The role of the IHPM in the handling, transporting, and storing hazardous and medical wastes includes:
- (1) Training employees about the proper work practices needed to reduce potential exposure.
 - (2) Ensuring employees have and use appropriate PPE.
 - (3) Promoting proper work practices.
 - (4) Assisting hazardous waste remediation projects through review of site safety and health plans.

7-12. Indoor air quality

a. Indoor air pollution results from tightly sealed buildings and ventilation systems that provide inadequate fresh air. The reduction of fresh air combined with a myriad of pollutants from poorly maintained heating, ventilation and air conditioning systems, new furnishings, insulation materials, and cigarette smoke increases health-related complaints of workers.

b. The role of the IHPM in assessing indoor air quality includes:

- (1) Prioritizing the evaluation of operations where the potential for non-industrial indoor air pollution exists based on the PAC scheme in the DOEHS-IH.
- (2) Coordinating with the Directorate of Engineering under the auspices of design review to evaluate existing ventilation systems and to recommend improvements.

7-13. Civilian resource conservation program

a. The civilian resource conservation program is the installation commander's program geared towards reducing claims and costs to DA made under the Federal Employees Compensation Act. (At the installation level, the CPO Technical Services Office is usually responsible for administering the Federal Employees Compensation Act.)

b. The CPO routinely coordinates a review of these claims with the safety officer, a command legal representative, and the OH program manager. This claims review board—

- (1) Verifies the accuracy of the claims.
- (2) Identifies trends in types and location of injury and illness.
- (3) Ensures that questionable claims are controverted.
- (4) Identifies areas/workplaces that require additional IH support to prevent future accidents or illnesses.

c. The role of the IHPM in the civilian resource conservation program (CRCP) is to provide sampling data or information collected during site visits to the CRCP subcommittee of the occupational safety and health council. Such information may either support the claim or necessitate its controversion. If no data exists for the particular workplace, the CRCP subcommittee of the OSH council may request that the IHPM sample or survey the operation to provide necessary data.

7-14. Confined space entry

The role of the IHPM in installation-managed confined space entry (29 CFR 1910.146 and ANSI Z117.1-1989) includes:

- a.* Assisting in the selection of RPE and other PPE for operations in confined spaces.
- b.* Identifying confined spaces in the DOEHS-IH.
- c.* Monitoring confined spaces, upon request, for the presence of chemical contaminants at potentially toxic levels (such as hydrogen sulfide, carbon monoxide, nuisance dusts, methane gas, and other contaminants). Alternatively, supervisors and workers who frequently enter confined spaces can be trained to operate monitoring equipment.
- d.* Assisting in other duties associated with confined spaces, such as training.

7-15. Health hazard assessment program

a. The IH consultants at the OTSG, USACHPPM, and some installations participate in the health hazard assessment process for equipment identified for long-term procurement by the Army.

b. AR 40-10 delineates the role of IH in the health hazard assessment process for OTSG and USACHPPM. The role of installation IH assets is, however, less defined.

c. The industrial hygienists and environmental science personnel requested to participate in Manpower and Personnel Integration (MANPRINT) Joint Working Groups must contact Commanding General, USACHPPM, ATTN: MCHB-TS-OHH, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403 for guidance.

d. All requirement documents must be staffed with the U.S. Army Medical Department Center and School for input to the health hazard assessment process. The U.S. Army Medical Department Center and School, Combat and Doctrine Developer, is the first line reviewer of System MANPRINT Management Plans for nondevelopment item developmental and materiel changes. They provide health hazard input to System MANPRINT Management Plans, operation requirements document and mission needs statements.

e. The IHPM must schedule IH and environmental science personnel who perform health hazard assessments (HHAs) or support the MANPRINT process to attend the HHA and MANPRINT officer course. Contact Commanding General, USACHPPM, ATTN: MCHB-TS-OHH, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403 for course information and schedules.

7-16. Chemical surety program

a. The role of the IHPM in support of chemical surety program on installations is broad and should be tailored according to chemical agent operations performed at each site. The IHPM will work with the installation chemical officer to assist in providing a healthful environment for personnel working with chemical agent and munitions as well as for people in the surrounding community.

b. The U.S. Army Safety Center is developing documents that contain detailed aspects of IH involvement in chemical agent operations.

Section III

Coordination for Industrial Hygiene Program Effectiveness

7-17. Higher command and staff

The MEDDAC/medical center industrial hygienists have a relatively unique position with many of the installation's staff and operational personnel on many occupational and environmental health issues. Open and complete communication is necessary to have and maintain an effective IH program. Higher command and staff can provide clarification in policy or specific guidance for the IHPM. Local directives may specify procedures for communicating with commands and staff.

7-18. Commanders

a. Command support is essential for the success of the IH program. Therefore, the IHPM should—

(1) Keep the commander informed of the IH program staff's duties, abilities, and accomplishments.

(2) Ensure that the commander is aware of how the IH program reduces costs and prevents occupational illness and injury.

b. Implementation of an effective IH program depends on the cooperation of unit commanders and supervisors. The IHPM should provide support and guidance to these individuals to ensure that health hazard control measures are implemented.

7-19. Safety office

a. The IHPM can work in partnership with the installation or supporting safety office to provide an effective safety and OH program that includes—

(1) The recognition of workplace health hazards and the referral of suspected health hazards.

(2) Coordinating and implementing IH recommendations for abatement or control of health hazards.

(3) Ensuring compliance with IH recommendations and exposure requirements.

b. The installation safety office uses information provided by the IHPM to—

(1) Correctly identify and assess workplace hazards.

(2) Establish safety RACs for abatement priorities and funding of engineering controls to abate OSH violations.

c. The IHPM and the safety office can work together to provide effective training.

7-20. Occupational safety and health committee

The installation OSH committee can serve as a mechanism to market and emphasize the IH program and policies, since all installation staff offices and tenant activities are represented and all are responsible for the health and safety of their employees.

7-21. Public affairs officer

The IHPM should coordinate with the public affairs officer, who can—

a. Assist in promoting education and publishing training information through the post paper, weekly bulletin, and proponent branch publications.

b. Act as a liaison with outside agencies and communication avenues (newspapers, television, and radio) outside DOD for the marketing and advertising of IH accomplishments and capabilities.

7-22. Radiation protection officer

The IHPM should coordinate with the radiation protection officer to discover the location and use of ionizing and nonionizing radiation producing equipment and operations involving radioactive materials.

7-23. Director of public works

a. The IHPM requires the information and service provided by Director of Public Works and Director, Installation Support to effectively manage and implement the IH program. The Director of Public Works and Director, Installation Support—

(1) Control all real property, perform maintenance, and implement IH recommendations to control health hazards. This includes:

- (*a*) Designing new facilities and modifying existing facilities.
- (*b*) Managing the installation asbestos management program, the radon program, and waste disposal for the installations, including hazardous waste.
- (2) Implement controls required to abate other OSH hazards.

b. The IHPM aids supervisors, the Director of Public Works, and other responsible parties in ensuring the effectiveness of health hazard controls by—

- (1) Evaluating the effectiveness of new and existing controls (including ventilation systems).
- (2) Participating in the design review process for proposed new systems and modifications of existing systems.
- (3) Reviewing purchase requests for new types of PPE, especially RPE.
- (4) Evaluating technology improvement projects for equipment, processes, and materials.

7-24. Environmental coordinator

The IHPM should coordinate with the environmental coordinator to provide technical assistance relating to human health effects, PPE requirements, and MSDS interpretations relating to the execution of solid and hazardous waste and air pollution and wastewater programs. (The environmental coordinator may be part of the engineering office or staff who is responsible for the management of all environmental programs.)

7-25. Pest management officer

a. The pest management officer can provide the IHPM with information concerning the location and use of pesticides.

b. The IHPM can provide the pest management officer with—

- (1) The evaluation of potential pesticide exposure.
- (2) The expertise in recommending and implementing engineering controls and PPE to reduce risk.

7-26. Civilian personnel officer

a. The IHPM can work with the civilian personnel officer, who can—

- (1) Assist the IHPM with internal staffing (such as, recruiting) to ensure a fully qualified IH staff.
- (2) Define specific requirements for job descriptions based on health hazard evaluation information. (For example, employees whose duties require a respirator must be clean-shaven.)

b. The IHPM can provide the civilian personnel officer with—

- (1) Health information for job classifications.
- (2) Health hazard evaluation information in support of Federal Employee Compensation Act claims.

c. The IHPM can assist in evaluating employees' claims for environmental differential pay/hazard differential pay.

7-27. Director of logistics

a. The Director of Logistics is the primary contact for installation activities when requesting the procurement of hazardous materials. Therefore, the IHPM's close coordination can prevent the acquisition/procurement of unnecessary hazardous materials by suggesting substitutions or providing early warning for needed controls.

b. The Director of Logistics is also responsible for requesting and ensuring receipt of MSDSs for hazardous materials, which provide chemical health hazard information for use during workplace health hazard information.

7-28. Director of contracting

The IHPM coordinates with Director of Contracting to—

- a.* Forward MSDSs to the IHPM for review.
- b.* Provide interpretation of MSDSs.
- c.* Provide IH input for any industrial base type of contract.

d. Review contract specifications for asbestos, lead abatement projects and/or hazardous waste removal or remediation. (See ARs 40-5, 385-10, and 200-1.)

7-29. Civilian industrial hygiene contractors

The provision of contracted IH services depends on specific contract wording. Therefore, the IHPM must use the contracting officer's representative to convey recommendations rather than specifying directions directly to the civilian contractor. Failure to coordinate with the civilian contractor through the contracting officer's representative may result in personal liability if the contractor follows your directives.

7-30. Unions and work councils

Coordination between the IHPM and unions and work councils is essential to facilitate worker acceptance of PPE, work practices, and control mechanisms.

7-31. Supervisors

The IHPM should coordinate with supervisors to ensure they have the appropriate information to assist in accomplishing the requirements of paragraph 2-1g.

7-32. Workers

The IHPM should coordinate with workers to ensure that they understand why controls or PPE are necessary for their health and that controls are effective only when they are properly used.

7-33. Childhood lead poisoning prevention program

a. The goal of the childhood lead poisoning prevention (CLPP) program is to minimize children's exposure to lead. This is accomplished by identifying and mitigating lead health hazards from all sources in a child's environment, including lead in paint, dust, soil and water. Implementation guidelines for the CLPP program are in Public Works TB 420-70-2. AR 420-70 contains the lead policy for Army facilities, and AR 200-1 contains the environmental lead policy. Public Works TB 420-70-2 defines the role of the IHPM in the CLPP program. The IHPM participates in a multi-disciplinary installation lead team, coordinating with other members to fulfill the AMEDD responsibilities of the program.

b. As part of the installation lead team, the AMEDD responsibilities include developing a coordinated strategy to implement medical case management and lead poisoning prevention by identification, exposure reduction, lead remediation activities, and coordination of installation support for all cases of childhood lead poisoning. The installation team also develops and implements comprehensive education programs regarding environmental lead exposures and lead poisoning directed at key professional groups, parents, the military community, and other target groups.

7-34. Personal protective equipment program

The role of the IHPM in the installation-managed PPE program (DODI 6055.1, encl 3) includes—

- a.* Evaluations of workplaces to determine appropriate PPE.
- b.* Making recommendations to area supervisors for appropriate PPE.
- c.* Training on appropriate use of PPE in health hazard communication training.

Appendix A References

Section I Required Publications

AR 40–5

Preventive Medicine. (Cited in paras 1-4*c*, 2-2*b*, 4-4*b*, 7-1*a*, 7-4*c*(4), 7-5*a*, 7-10*a* and *b*, and 7-28*d*.)

AR 200–1

Environmental Protection and Enhancement. (Cited in paras 7-9, 7-28*d*, and 7-33*a*.)

AR 385–10

The Army Safety Program. (Cited in paras 1-4*d*, 4-4*b*, 7-10*a* and *b*, and 7-28*d*.)

AR 690–400

Total Army Performance Evaluation System. (Cited in para 3-1*b*(3)(*b*).)

Unnumbered Publication

Army Civilian Training, Education and Development System Plan for Industrial Hygienist. (This publication is available from the Commander, U.S. Army Medical Department Center and School, AMEDD Personnel Proponent Directorate, ATTN: MCCS-DC, 1400 E. Grayson Street, Fort Sam Houston, TX 78234-6175.) (Cited in paras 2-1*a*(2), 3-1*b*(3)(*a*), and 5-4*a*(3).)

Section II Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this pamphlet.

ANSI Standard Z117.1–1989

Safety Requirements for Confined Spaces. (This publication is available from the American National Standards Institute, 11 W. 42nd Street, New York, NY 10036.)

AR 11–34

The Army Respiratory Protection Program

AR 25–400–2

The Modern Army Recordkeeping System (MARKS)

AR 40–10

Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process

AR 420–70

Buildings and Structures

AR 600–3

The Army Personnel Proponent System

AR 750–43

Army Test, Measurement and Diagnostic Equipment Program

DA PAM 40–501

Hearing Conservation Program

DA PAM 611–21

Military Occupational Classification and Structure

DODD 1000.3

Safety and Occupational Health Policy for the Department of Defense

DODD 5500.7

Standards of Conduct

DODI 6050.5

DoD Hazard Communication Program

DODI 6055.1

DoD Occupational Safety and Health Program

DODI 6055.5

Industrial Hygiene and Occupational Health

Federal Personnel Manual

U.S. Civil Service Commission

OPM Handbook Quality Standards

Qualification Standards Handbook for General Schedule Positions

Public Law 91-596

Occupational Safety and Health Act of 1970

Public Works TB 420-70-2

Installation Lead Hazard Management. (This publication is available from the U.S. Army Center for Public Works, 7701 Telegraph Road, Alexandria, VA 22315-3862.)

TB MED 506

Occupational and Environmental Health Occupational Vision

TB MED 510

Guidelines for the Control and Evaluation of Occupational Exposure to Waste Anesthetic Gases

TB MED 513

Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure

Unnumbered Publication

American Industrial Hygiene Association Membership Directory, Who's Who in Industrial Hygiene, most current edition. (This publication is available from the American Industrial Hygiene Association, 1212 New York Avenue, NW, Suite 750, Washington, DC 20005.)

Unnumbered Publication

Industrial Hygiene News Buyer's Guide. (This publication is available from Industrial Hygiene News, 8650 Babcock Boulevard, Pittsburgh, PA 15237-5821.)

Unnumbered Publication

DOEHRS-IH User's Manual. (This publication is available from the Commanding General, USACHPPM, ATTN: MCHB-TS-OIM, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.)

USACHPPM Technical Guide 141

Industrial Hygiene Air Sampling and Bulk Sampling Instructions. (All USACHPPM Technical Guides are available from the Commanding General, USACHPPM, ATTN: MCHB-CS-IDD, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.)

USACHPPM Technical Guide 165

Installation Industrial Hygiene Program Self-Assessment Guide

USACHPPM Technical Guide 181

Noise Dosimetry and Risk Assessment

USACHPPM Technical Guide 190

Guide to Managing Occupational Exposure to Bloodborne Pathogens

3 CFR

The President

29 CFR 1910

Occupational Safety and Health Standards

29 CFR 1910.146

Permit-Required Confined Spaces

29 CFR 1910.1020

Access to Employee Exposure and Medical Records

29 CFR 1910.1200

Hazard Communication

29 CFR 1915

Occupational Safety and Health Standards for Shipyard Employment

29 CFR 1926.1101

Asbestos

29 CFR 1960

Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters

40 CFR

Protection of the Environment

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

This section contains no entries.

Appendix B

Minimum Sampling Equipment Requirements

B-1. Sampling equipment

The sampling equipment listed in tables B-1 and B-2 provides an acceptable level of quality. The quantities are estimated for typical requirements; each IHPM will need to determine specific local requirements based on IH staffing levels and numbers/types of operations.

B-2. Source of information

The information contained in tables B-1 and B-2, as well as additional information, can be found in the current edition of Industrial Hygiene News Buyer's Guide. (See app A.)

Table B-1
Sampling equipment

Quantity	Description
2 ea	Sound Level Meter Sound Level Meter and Calibrator Kit with Carrying Case
2 ea	Air Velocity Meter
1 ea	Air Velocity Meter (Pitot Tube Kit)
1 ea	Light Meter, Cosine Corrected
1 ea	Calibrator, Mass Flow/Bubble Meter
1 ea	Wet Bulb Globe Temperature Index Kit
1 ea	Aspirator Bulb (for smoke tube)
1 bx	Smoke Tubes, 12/box Smoke Tubes, 10/box Smoke Tubes, 10/box
1 ea	Thermometer to 220 Degrees Fahrenheit
1 ea	Mercury Sniffer with Battery Charger
1 ea	Carbon Monoxide Monitor
1 ea	Certified Span Gas for Calibration of Carbon Monoxide Monitor
3 ea	Portable Personnel Air Samplers
1 ea	Low-Flow, Constant Flow Air Sampler (20 to 400 cubic centimeters/minute)
3 ea	Air Sampler Chargers
1 ea	Gas and Vapor Detector
1 bx	0.8 micrometer Cellulose Ester Filter 37 millimeter (mm), 100/box (with support pads)
1 dz	Midget Impingers, Spillproof with Protective Plastic Covering
1 bx	Type A Class Fiber Filters, 37 mm, 500/box
1 bx	5.0 micrometers Polyvinyl Chloride Filter, 37 mm, 100/box (with support pads)
2 ea	Cyclone Assembly, Complete
1 bx	Filter Backing Pads, 100/box
1 pk	50 Complete Filter Cassettes, Empty for 37 mm Filters with Spacer Rings
1 dz	Bulk Sample Containers
50 ea	Charcoal Tubes

Table B-1
Sampling equipment—Continued

Quantity	Description
4 bx	Carbon Monoxide Detector Tubes #1La
2 bx	Nitrogen Dioxide Detector Tubes #9L
1 bx	Trichloroethylene #132G
1 bx	Toluene Tube #122
1 bx	Xylene Tube #123
1 bx	Ozone Tube #18L
1 bx	Formaldehyde Tube #91L
1 bx	Ammonia Tube #3L
1 bx	Methyl Chloroform Tubes #135
1 dz	Midget Impingers, Complete
1 ea	Infrared Analyzer
1 ea	Tape Measure, 6 feet
1 ea	Tape Measure, 50 feet
1 ea	Flashlight
1 ea	Screwdriver Set
2 ea	Pistol Belts
1 ea	Masking Tape, 60 yard roll
1 dz	Hose Adapters for 1/4 inch Tubing (Female Luer to Male Luer Slip)
1 roll	1/4 inch ID Sampling Tubing, 50 foot roll
1 ea	Stop Watch

Table B-2
Supplemental sampling equipment

Quantity	Description
1 ea	Velometer®
1 ea	Tachometer, Photoelectric Handheld
1 ea	Combustible Gas and Oxygen Indicator (Combination)
4 ea	Air Sampling Pumps plus Chargers
2 ea	Volume Samplers
200 ea	Volume Filters
2 ea	Standard Impingers
2 ea	Large Fritted Impingers (Gas Washing Bottle) Plus Medium Volume Pump
4 ea	Cyclone Assemblies Complete
50 ea	Charcoal Tubes
1 ea	Mercury Sniffer with Battery (must specify)

Notes:

Velometer® is a registered trademark with the Alnor Instrument Company, 7555 North Linder Avenue, Skokie, IL 60077.

Appendix C

Industrial Hygiene Implementation Plan

C-1. Administrative functions

a. The IHPM or his or her designee usually performs administrative functions of an IHIP. Table C-1 shows a sample IHIP. The IHPM should—

- (1) Estimate the number of annual hours to complete or manage each function.
- (2) Assign a priority and review/completion date.
- (3) Designate the individual responsible for the function.

b. Two schemes follow which could be used for assigning priorities.

(1) Scheme A.

(a) Critical-regulated.

(b) Critical-not regulated.

(c) Noncritical-regulated.

(d) Noncritical-not regulated.

(2) Scheme B.

(a) 1 (High).

(b) 2 (Medium).

(c) 3 (Low).

c. Administrative functions include but in no way are limited to—

- (1) Preparing the annual IH budget.
- (2) Planning work schedules for technical and clerical staff.
- (3) Conducting human resource actions (staffing requests, interviews, performance appraisals and awards, and miscellaneous personnel issues).
- (4) Conducting professional staff training and preparing development plans.
- (5) Maintaining equipment resources and supplies (IH equipment, office and field consumables).
- (6) Serving on committees (committee meetings attended or technically supported upon request).
- (7) Marketing services/public relation's liaison.
- (8) Maintaining the DOEHS-IH system.
- (9) Conducting QA.
- (10) Performing command review and analysis.
- (11) Writing service support agreements and memorandums of understanding.
- (12) Developing and coordinating contracts.
- (13) Maintaining documents and records.
- (14) Preparing the annual IHIP.
- (15) Developing IH program policy and procedures.
- (16) Completing IH reports of survey.
- (17) Conducting design review.
- (18) Reviewing SOPs.
- (19) Providing interdisciplinary technical support to safety, engineering, occupational medicine, and environmental.
- (20) Conducting external program reviews and audits.
- (21) Performing internal program self-assessments.
- (22) Maintaining target suspenses, follow-up, special briefings and crisis management (that is, planning for the unknown).

C-2. Program functions

a. Program functions of an IHIP include policies and SOPs for which IH is the proponent or provides technical support. The IHPM should—

- (1) Estimate the number of annual hours to complete or manage each function.
- (2) Assign a priority and review/completion date.
- (3) Designate the individual responsible for the function.

b. Two schemes follow which could be used for assigning priorities.

(1) Scheme A.

(a) Critical-regulated.

(b) Critical-not regulated.

(c) Noncritical-regulated.

(d) Noncritical-not regulated.

(2) Scheme B.

- (a) 1 (High).
- (b) 2 (Medium).
- (c) 3 (Low).
- c. Administration functions include but in no way are limited to—
 - (1) Establishing the IH program policy.
 - (2) Preparing the IHIP.
 - (3) Preparing the IH survey prioritization.
 - (4) Conducting the health hazard inventory.
 - (5) Maintaining the DOEHRS-IH system.
 - (6) Completing the IH report of survey.
 - (7) Reviewing specifications, designs, and worksite SOPs.
 - (8) Maintaining and calibrating equipment.
 - (9) Developing the exposure-monitoring plan.
 - (10) Monitoring respiratory protection and PPE.
 - (11) Participating as necessary in the hearing conservation program.
 - (12) Participating as necessary in the confined space entry program.
 - (13) Participating as necessary with hazard communication training.
 - (14) Developing the laboratory chemical hygiene plan.
 - (15) Adhering to the community right-to-know.
 - (16) Participating as necessary in the hazardous waste program.
 - (17) Participating as necessary in the occupational vision program.
 - (18) Conducting lead assessments.
 - (19) Managing asbestos abatement.
 - (20) Assisting the ergonomics program.
 - (21) Conducting the indoor air quality program.
 - (22) Providing information on reproductive health.
 - (23) Supporting the toxic chemical agent program.
 - (24) Assisting the radiation protection program.
 - (25) Bloodborne pathogens.
 - (26) Biological material and waste.
 - (27) Pesticide management.
 - (28) Illumination.
 - (29) Medical surveillance program support and coordination.
 - (30) The IH aspects of OSHA complaint investigations.
 - (31) Epidemiological investigations.
 - (32) The IH aspects of Federal Employees Compensation Act claims review.
 - (33) The IH aspects of employee worksite hazard training.
 - (34) The IH staff development plan.
 - (35) Industrial and laboratory ventilation support plan.
 - (36) Preoperational activities.
 - (37) The IH aspects of worksite employee health and safety training.

Table C-1
Sample industrial hygiene implementation plan

Survey Date	Priority	Bldg Location	IH Resource Assign.	Operation Description/ Admin/Prgm Function	# of Operations	HHI	Noise	Vent	Exposure Sampling (Type)	Training (Type)	Other (Specify)	Survey & Report Time (Hrs)
Jan 99	1	13	Sue	Vapor Degreasing	2	X		X	Solvent	Resp. Fit Test 6 Empls		10
Jan 99	1	13	Sue	Stenciling	2	X		X	Solvents		Employee Complaint Filed 12/12/98	20
Jan 99	1	N/A	John	Confined Space Policy	Multiple						Develop Draft	40
Jan 99	1	N/A	Sue	Laboratory SOP Review	4							40
Jan 99	1	N/A	John	Performance Review/Sue								6
Jan 99	1	N/A	Sue	Performance Review w/Supv.								2
Jan 99	1	N/A	John	Safety Committee Mtg.								6
Jan 99	1	Various	John/Sue	Various Support	Multiple						Unplanned/Emergency Complaint	40
Jan 99	2	13	Sue	Drying Operation	2	X	TBD	X	Dust & Vapors			10
Jan 99	2	13	Sue	Metal Sanding	6	X	TBD	X	Metallic Dust			40
Jan 99	2	RSS	John	Haz. Waste Storage	5	X		X				40
Jan 99	3	16	John	Welding	4	X	TBD	X	Metal Fumes/UV			20
Jan 99	3	N/A	Sue/John	DOEHRS-IH Data Input & System Maintenance	20							30
Total Hours Scheduled for January												304
Feb 99	1	16	Sue	Review Welding Shop SOPs	3							30
Feb 99	1	21	John	Plating	12	X		X	Acids/Metal Fumes			60
Feb 99	1	28	John	Plating	6	X		X	Acids/Metal Fumes			40
Feb 99	1	N/A	John	Confined Space Policy							Distribute and Review Comments	30
Feb 99	1	Various	John/Sue	Various Support	Multiple						Unplanned/Emergency Complaint	40

Table C-1
Sample industrial hygiene implementation plan—Continued

Survey Date	Priority	Bldg Location	IH Resource Assign.	Operation Description/ Admin/Prgm Function	# of Operations	HHI	Noise	Vent	Exposure Sampling (Type)	Training (Type)	Other (Specify)	Survey & Report Time (Hrs)
Feb 99	2	N/A	John	Medical Surveillance Mtg.								4
Feb 99	2	16	Sue	Dip Tank Cleaning	3	X		X	Acids			40
Feb 99	2	16	Sue	Spray Cleaning	2	X		X	Solvents			25
Feb 99	3	N/A	John	QA Review Equipment Calibration								5
Feb 99	3	N/A	Sue/ John	DOEHRS-IH Data Input & System Maintenance	25							30
Total Filed Survey Hours Scheduled for February												304

Appendix D

Risk Assessment Codes

D-1. Determining risk assessment codes

Risk assessment codes are used to evaluate four types of hazards: health, safety, ergonomic, and noise. The IHPM should use the most appropriate method and then forward the RAC to the installation Safety Manager for inclusion to the Installation Hazard Abatement Plan.

D-2. Method 1—health risk assessment code

Use the matrices and descriptive definitions below as a model to determine the RAC for health hazards.

a. Use the following procedures to assess points and to determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a single physical, chemical, or biological agent and the medical effects of exposure. Table D-1 contains the matrix for assessing exposure points (EP) for different exposure conditions. Table D-2 provides the matrix for assessing medical effects points.

b. Determine the HHSC by totaling the points assessed and then using guidance in table D-3.

c. Use the matrices in tables D-4 and D-5 to assess the duration of exposure and number of exposed personnel points. The total number of points will determine the illness probability category (IPC). The IPC is a function of the duration of exposure and the number of exposed personnel.

d. Determine the IPC for health hazards by totaling the points assessed and then use the guidance provided in table D-6.

e. Determine the RAC for health hazards by using the matrix in table D-7 to account for the HHSC and IPC.

D-3. Method 2—safety and ergonomic hazards risk assessment codes

a. The safety and ergonomic RACs show the degree of risk assessment by combining the elements of hazard severity and accident probability. The RACs will be used to establish priorities for corrective action to resolve identified hazards. The RACs are used to quantify risk to personnel. Use the matrix in table D-8 to determine the RAC. The lower the number assigned the higher the assessed risk. For example, a hazard severity of IV and an accident probability of C would give a safety and ergonomic RAC of 5. RACs 1 (critical) and 2 (serious) equal high-level risks. RAC 3 (moderate) equals a medium-level risk, and RACs 4 (minor) and 5 (negligible) equal low-level risks.

b. Hazard severity for safety and ergonomic RACs is an assessment of the worst potential consequence. This assessment of the expected consequence is defined by the degree of injury or occupational illness that could occur from exposure to the hazard. The hazard severity is classified by an uppercase Roman numeral and described as follows:

- (1) I—Death, permanent total disability or loss of facility or asset.
- (2) II—Permanent partial disability, temporary total disability in excess of 3 months or major property damage.
- (3) III—Minor injury, lost-workday injury or compensable injury or minor property damage.

(4) IV—Minimal threat to personnel or property, first aid, minor supportive medical treatment, but still a violation of a standard.

c. Accident probability refers to the likelihood that a safety and ergonomic hazard will occur. This probability is based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and effected population. Qualitative accident probability codes are assigned by a capital letter as explained in table D-9.

D-4. Method 3—noise risk assessment

a. The following procedures, adapted from DODI 6055.1, should be used to determine the RAC for a noise hazard:

(1) Determine the HHSC. The HHSC reflects the magnitude of exposure to noise and the medical effects of exposure.

(a) Assign EPs—a maximum of eight is possible—using different equations for steady-state or impulse noise. If exposure to steady-state and impulse noise occurs on the same day, or even simultaneously, use the greater of the points calculated for either exposure. Do not combine points for both exposures.

(b) For steady-state noise, convert the 8-hour time-weighted average sound level (TWA) to dose using the equation—

$$D = 100 \cdot 10^{\frac{TWA-85}{10}}$$

Where—

D is the percent noise dose (a TWA of 85 A-weighted decibel is 100 percent dose).

TWA is the 8-hour weighted average noise exposure in A-weighted decibel.

Then—

$$EP = \frac{D}{100}$$

For impulse noise—

$$EP = \frac{N}{100} \cdot 10^{\frac{Lpk-138}{5}}$$

(c) Where—

N is the number of impulse noise events per day.

Lpk is the peak noise level of the impulse in peak decibel.

(d) Assign six medical effects points, because the medical effect is permanent hearing loss.

(e) Find the sum of EP and medical effects points and determine the HHSC using table D-10. Note that the total will be no higher than 14 points.

(2) Determine the mishap probability category. This category reflects the probability of mishap and the number of personnel exposed to noise in the operation being assessed.

(a) Assign points for the consistency of exposure using table D-11.

(b) Assign points for the number of employees exposed to the operation using table D-12.

(c) Find the sum of the points for consistency of exposure and the points for the number of personnel exposed. Determine the mishap probability category using table D-13.

(3) Determine the RAC using table D-14.

b. Assigning a RAC reflects the extent and severity of a noise hazard based solely on an analysis of the noise environment. It does not reflect the effects of any hearing protection worn by the employees. The RACs do not account for hearing-protection devices because engineering controls and other means should be used to control noise exposures. Hearing protection should be considered only as a last resort or until engineering controls are implemented.

Table D-1
Exposure points assessed

Alternate Exposure Route	Exposure Conditions			
	< Action Level	Occasionally > Action Level, Always < Occupational Exposure Limit (OEL)	> Action Level < OEL	> OEL
No	0	3	5	7
Yes	1 - 2	4	6	9

Table D-2
Medical effects points assessed

Condition	Points
No medical effect (such as nuisance noise and nuisance odor)	0
Temporary reversible illness requiring supportive treatment (such as eye irritation and sore throat)	1 - 2
Temporary reversible illness with a variable but limited period of disability (such as metal fume fever)	3 - 4
Permanent, non-severe illness or loss of capacity (such as permanent hearing loss)	5 - 6
Permanent, severe, disabling, irreversible illness or death (such as asbestosis and lung cancer)	7 - 8

Table D-3
Determining the health hazard severity category

Total points (sum of exposure and medical effects points)	HHSC
13 - 17	I
9 - 12	II
5 - 8	III
0 - 4	IV

Table D-4
Duration of exposure points assessed

Type of Exposure	Exposure Duration		
	1 - 8 hours/week	> 8 hours/week, not continuous	Continuous
Irregular, Intermittent	1 - 2	4 - 6	N/A
Regular, periodic	2 - 3	5 - 7	8

Table D-5
Number of exposed personnel points assessed

Number of exposed workers	Points
< 5	1 - 2
5 - 9	3 - 4
10 - 49	5 - 6
> 49	7 - 8

Table D-6
Determining the illness probability category

Total assessed points	IPC
14 - 16	A
10 - 13	B
5 - 9	C
< 5	D

Table D-7
Risk assessment codes for health hazards

HHSC	IPC			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

Table D-8
Safety and ergonomic risk assessment codes

Hazard severity	Accident probability			
	A	B	C	D
I	1	1	2	4
II	1	2	3	4
III	2	3	4	5
IV	4	4	5	5

Table D-9
Accident probability codes

Code	Description
A	Likely to occur immediately
B	Probably will occur in time
C	Possible to occur in time
D	Unlikely to occur

Table D–10**Health hazard severity category**

Total Points (EP + medical effects points)	Category
7 - 14	II
< 7	III

Table D–11**Consistency of exposure points**

Long-Term Consistency	1 Day/Week	Weekly Consistency 2 - 4 Days/Week	5 Days/Week
Not every week	2	5	8
Every week	3	6	8

Table D–12**Employee number points**

Number of Exposed Personnel	Points
< 5	2
5 - 9	3 - 4
10 - 49	5 - 6
> 49	7 - 8

Table D–13**Mishap probability category**

Total Points (Consistency + Number of Personnel)	Mishap Probability Code
14 - 16	A
10 - 13	B
5 - 9	C
< 5	D

Table D–14**Risk assessment codes**

HHSC	<u>Mishap Probability Code</u>			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

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Glossary

Section I Abbreviations

ACGIH

American Conference of Governmental Industrial Hygienists

ACTEDS

Army civilian training, education and development system

AIHA

American Industrial Hygiene Association

AMEDD

Army Medical Department

ANSI

American National Standards Institute

CFR

Code of Federal Regulations

CLPP

childhood lead poisoning prevention program

CPO

Civilian Personnel Office

CRCP

civilian resource conservation program

DOD

Department of Defense

DODI

Department of Defense Instruction

DOEHRS-IH

Defense Occupational and Environmental Health Readiness System–Industrial Hygiene

EP

exposure points

HAZCOM

hazard communication

HHA

health hazard assessment

HHSC

Health hazard severity category

IH

industrial hygiene

IHIP

industrial hygiene implementation plan

IHPM

industrial hygiene program manager

IMA

installation medical authority

IPC

Illness probability category

MANPRINT

manpower and personnel integration

MEDCOM

U.S. Army Medical Command

MEDDAC

Medical Department Activity

mm

millimeter

MSDS

material safety data sheet

MTF

medical treatment facility

OEL

occupational exposure limit

OH

occupational health

OSH

occupational safety and health

OSHA

Occupational Safety and Health Administration

OTSG

Office of The Surgeon General

PAC

priority action code

PEL

permissible exposure limit

PPE

personal protective equipment

QA

quality assurance

RAC

risk assessment code

RPE

respiratory protective equipment

SASOHI

Standard Army Safety and Occupational Health Inspection

SOP

standing operating procedure

TG

technical guide

TLV

threshold limit value

TSG

The Surgeon General

TWA

8-hour time-weighted average sound level

USACHPPM

U.S. Army Center for Health Promotion and Preventive Medicine

WMD

work-related musculoskeletal disorder

Section II**Terms****Contractor**

A non-Federal employer engaged in performance of a DA contract, whether as prime contractor or subcontractor.

Credentials

The documents that constitute evidence of training, licensure, experience, and expertise of a practitioner.

DA personnel

a. Civilian. Includes General Schedule and Wage Grade employees (including National Guard and Reserve technicians), Merit Pay System employees, Nonappropriated Fund employees, and foreign nationals directly employed by DA.

b. Military personnel. Includes—

- (1) All military personnel on active duty.
- (2) Reserve or National Guard personnel on active duty or in drill status.
- (3) Service academy midshipmen or cadets.
- (4) Reserve Officer Training Corps cadets when engaged in directed training activities.
- (5) Foreign national military personnel assigned to DA.

Health hazard

An existing or likely condition, inherent to the operation or use of materiel, that can cause death, injury, acute or chronic illness, disability, and reduced job performance of personnel by exposure to—

- a.* Acoustical energy.
- b.* Biological substances.
- c.* Chemical substances.
- d.* Oxygen deficiency.
- e.* Radiation energy.
- f.* Shock.
- g.* Temperature extremes and humidity.
- h.* Trauma.
- i.* Vibration.

Industrial hygiene

The science and art devoted to the anticipation, recognition, evaluation, and control of those environmental factors or stresses, arising in or from the workplace, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among workers.

Industrial hygiene implementation plan

A priority list of evaluation requirements and a schedule for accomplishment of those evaluations.

Installation

A grouping of facilities, located in the continental U.S. or outside continental U.S., that support particular DA functions. Installations may be elements of a base including locations such as posts, camps, or stations.

Installation Medical Authority

The unit surgeon, command chief surgeon, MEDDAC and/or medical center commanders, and the Director of Health Services, or his or her representative responsible for provision of medical support at the unit, command, or installation concerned.

Privileging

The processing through credentials committee channels of those individuals given the authority and responsibility for making independent decisions to evaluate, initiate, alter, or terminate.

Risk assessment

A structured process to identify and assess hazards. An expression of potential harm, described in terms of hazard severity, accident probability, and exposure to hazard.

Workplace

a. Nonmilitary-unique workplace or operation. A DA military or civilian workplace or operation that is comparable generally to those of the private sector. Examples include facilities involved and work performed in the repair and overhaul of weapons, vessels, aircraft, or vehicles (except for equipment trials); construction; supply services; civil engineer or public works; medical services; and office work.

b. Military-unique workplace, operations, equipment, and systems. A DA military and civilian operation and workplace that is unique to the national defense mission. This includes combat and operation, testing, and maintenance of military-unique equipment and systems such as military weapons, ordnance, and tactical vehicles. It also includes operations such as peacekeeping missions; field maneuvers; combat training; military-unique Research, Development, Test, and Evaluation activities; and actions required under national defense contingency conditions.

c. DA contractor workplace. Any place including a reasonable access route to and from, where work has been, will be, or is being performed by contractor employees under a DA contract. "DA contractor workplace" does not include any area, structure, machine apparatus, device, equipment, or material therein with which the contractor employee is not required or reasonably expected to have contact; nor does it include any working condition for which OSHA jurisdiction has been preempted pursuant to section 4(b)(1) of Public Law 91-596.

Section III**Special Abbreviations and Terms**

This section contains no entries.

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